REMARKS/DISCUSSION OF ISSUES

Claims 1-5 are pending in the application.

A certified copy of the priority document was filed by U.S. mail on for February 2003. A copy of the claim for priority accompanying the priority document, showing the certificate of mailing, is provided herewith.

The Office action rejects claims 1-5 under 35 USC § 112, first paragraph. Applicant respectfully traverses this rejection. As explained below, applicant's disclosure fully enables one skilled in the art to make and use the invention.

The Office action asserts that "it is unclear as to how parasitic capacitance works in the absence of unexpected test results or any theoretical formula to support this limitation." Applicant respectfully submits that one skilled in the art knows how parasitic capacitance works and fully understands how to measure LCD parasitic capacitance, as evidenced for example by the publication "Back Light Inverters for LCDs" (copyright 2001-2002) published by Minebea Electronics Co., available on the Internet at http://www.minebea-ele.com/en/product/backl/C_3000/C_3001.html for instance, and therefore would easily be able to determine where to place the light sources to satisfy the parasitic capacitance criteria recited in claim 1.

The Office action also asserts that physical properties do not receive patentable weight unless supported by unexpected results. Applicant responds that the criticality of the parasitic capacitance criteria recited in the claims is a major aspect of the invention and extensive discussion of its criticality is given in applicant's disclosure, for example on page 4, lines 15-20 of the specification and various other places therein. Therefore this feature of the claims must be given patentable weight. Accordingly, withdrawal of the 35 USC § 112, first paragraph rejection of claims 1-5 is respectfully requested.

The Office action rejects claims 1-5 under 35 USC § 103(a) over U.S. Pat. No. 6,390,638 to Miller et al. Applicant respectfully traverses this rejection. Claim 1, and therefore also claims 2-5 that depend directly or indirectly from claim 1, are patentable over Miller et al. at least because Miller et al. do not teach or suggest the patentable feature of claim 1 that the three light sources are provided so as to have the same parasitic capacitance caused by intervals between the light sources and the light reflection member. And, since Miller et al. are silent as to the necessity for providing the recited criteria regarding parasitic capacitance, even if, as the Office action suggests, someone skilled in the art would be motivated to add more than two light sources to the apparatus of Miller et al., there would still be no motivation to provide the criteria regarding parasitic capacitance required by claims 1-5. Accordingly, claims 1-5 are patentable under 35 USC § 103(a) over Miller et al. Withdrawal of the rejection of claims 1-5 under 35 USC § 103(a) is therefore respectfully requested.

In view of the foregoing, applicant(s) respectfully request(s) that the Examiner withdraw the rejections of record, allow all the pending claims, and find the application to be in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Eric M. Bram
Reg. 37,285
Att'y for Applicant(s)
Philips Intellectual Property
& Standards

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

MITSUTERO AKIHO

Serial No.: 09/932,102

Filed: August 17, 2001

Title: BACKLIGHT FOR LCDS

Atty. Docket No.

PHJ 99-028

Group Art Unit: 2875

Examiner: Alavi Ali

Honorable Commissioner for Patents
Washington, D.C. 20231

CLAIM FOR PRIORITY

Sir:

A certified copy and an verified English translation of the Japanese Application No. 99-358680 filed December 17, 1999 referred to in the Declaration of the above-identified application is attached herewith.

Applicant claims the benefit of the filing date of said Japanese application.

Respectfully submitted,

By _____
Eric M. Bram, Reg. 37,285
Attorney
(914) 333-9635

Enclosure

CERTIFICATE OF MAILING
It is hereby certified that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to:
COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

On Feb. 4, 2003

By _____
s:\br\j99028.priority

VERIFICATION OF TRANSLATION

I, Akihiko Miyazaki of Philips Building, 13-37, Kohnan 2-chome, Minato-ku, Tokyo 108-8507 Japan, am the translator of the documents attached and state that the following is a true translation, to best of my knowledge and belief, of the certified copy of Japanese Patent Application No. 11-358680.

At Tokyo on this 22nd day of January, 2003

Akihiko Miyazaki

Akihiko Miyazaki

JAPAN PATENT OFFICE

This is to certify that the annexed is a true copy of the following application as filed with this Office.

Date of Application:	December 17, 1999
Patent Application Number:	11-358680
[ST.10/C]:	[JP1999-358680]
Applicant(s):	Koninklijke Philips Electronics N.V.

December 27, 2002

Shinichiro OHTA, Commissioner, Patent Office

Certification No. 2002-3102778

日 本 国 特 許 庁
JAPAN PATENT OFFICE

別紙添付の書類に記載されている事項は下記の出願書類に記載されている事項と同一であることを証明する。

This is to certify that the annexed is a true copy of the following application as filed with this Office

出 願 年 月 日
Date of Application: １９９９年１２月１７日

出 願 番 号
Application Number: 平成１１年特許願第３５８６８０号

[ST.10/C]: [ＪＰ１９９９－３５８６８０]

出 願 人
Applicant(s): コーニンクレッカ フィリップス エレクトロニクス エヌヴィ

２００２年１２月２７日

特 許 庁 長 官
Commissioner,
Japan Patent Office 太田信一郎

出証番号 出証特２００２－３１０２７７８

Minebea

Our Technology

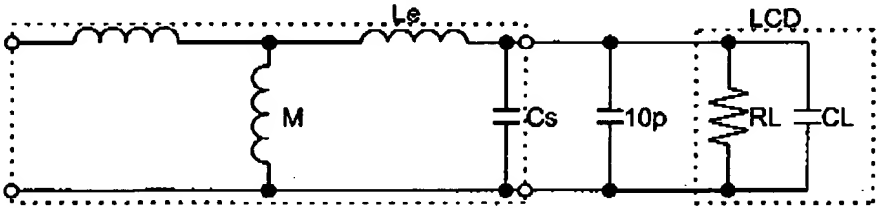
CHARACTERISTICS

2. Leakage transformer equivalent networks and LCD parasitic capacitance

This is an example where the leakage transformer degree of coupling (K) is lowered below 0.9, and the leakage inductance of the transformer secondary size is increased. When the degree of coupling (K) is reduced to below 0.9, the transformer's passband width is narrow, and as only the chosen frequency is transferred, this offers the best characteristics as a transformer for use with backlight inverters.

The equivalent networks of leakage transformers including LCD panels are as follows.

- Leakage transformer:
  Primary: 25 turns Secondary: 2,390 turns Gap: 75 μm
  Secondary side inductance LS: 510 mH
  Secondary side leakage inductance (Lk) of primary side short-circuit: 183 mH
- LCD panel: 13.3 inch, 14.1 inch, 15.0 inch



Le: Leakage inductance expected with coupling coefficient (K)
M : Mutual inductance
K : Coupling coefficient
Cs: Line capacity of the transformer secondary side
RL : Negative resistance of the CFL
CL : Parasitic capacitance of the CFL

Equivalent network constants can be found using the formula below.
F1 is the resonance frequency with the secondary side disconnected
F is the secondary side resonance frequency

$Cs = 1/((2\times\pi\times F1)\wedge 2\times Ls)$
$K = \sqrt{(1-(Lk/Ls))}$
$Le = (1-K)\times Ls$
$M = K\times Ls$
$Co = 1/((2\times\pi\times F)\wedge 2\times Le)$
$CL = Co-(10PF+Cs)$

From this Le = 101.6 mH, K = 0.8, M = 408.4 mH, Cs = 4.2 pF can be found.
Calculating the parasitic capacitance of LCD panels using these constants gives the following values.

13.3-inch panel: 15.2 pF
14.1-inch panel: 14.5 pF
15.0-inch panel: 18.0 pF

Understanding the parasitic capacitance of the LCD, we can d sign the constants of the leakage transformer.

This is an example where the leakage transformer degree of coupling (K) is lowered be and the leakage inductance of the transformer secondary size is increased.
When the degree of coupling (K) is reduced to below 0.9, the transformer's passband v narrow, and as only the chosen frequency is transferred,
this offers the best characteristics as a transformer for use with backlight nverters.

The equivalent networks of leakage transformers including LCD panels are as follows.

- Leakage transformer:

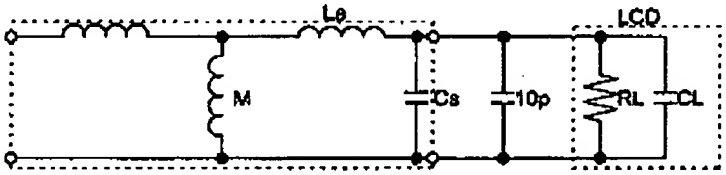
  Primary: 25 turns Secondary: 2,390 turns Gap: 75 mm

  Secondary side inductance LS: 510 mH

  Secondary side leakage inductance (Lk) of primary side short-circuit: 183 mH

- LCD panel:

  13.3 inch, 14.1 inch, 15.0 inch



Le : Leakage inductance expected with coupling coefficient (K)
M : Mutual inductance
K : Coupling coefficient
Cs : Line capacity of the transformer secondary side
RL : Negative resistance of the CFL
CL : Parasitic capacitance of the CFL

Equivalent network constants can be found using the formula below.

$Cs = 1 / ((2 \times \pi \times F1) \wedge 2 \times Ls)$
$K = \sqrt{ (1 - (Lk / Ls))}$
$Le = (1 - K) \times Ls$
$M = K \times Ls$
$Co = 1 / ((2 \times \pi \times F) \wedge 2 \times Le)$
$CL = Co - (10PF + Cs)$

F1 is the resonance frequency with the secondary side disconnected

F is the secondary side resonance freq

From this Le = 101.6 mH, K = 0.8, M = 408.4 mH, Cs = 4.2 pF can be found.

Calculating the parasitic capacitance of LCD panels using these constants gives the following values.

13.3-inch panel : 15.2 pF
14.1-inch panel : 14.5 pF
15.0-inch panel : 18.0 pF

Understanding the parasitic capacitance of the LCD, we can design the constants of the leakage transformer.